

METHOD OF FORMING A GATE ELECTRODE, METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING THE GATE ELECTRODE, AND METHOD OF OXIDIZING A SUBSTRATE

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ABSTRACT OF THE DISCLOSURE

10 In a method for forming a gate electrode having an excellent sidewall profile, after a gate structure is formed on a substrate, a first oxide film is formed on a sidewall of the gate structure and on the substrate by re-oxidizing the gate structure and the substrate under an atmosphere including an oxygen gas and an inert gas. The gate structure has a gate oxide film pattern, a polysilicon film pattern and a metal silicide film pattern. A portion of the first oxide film formed on a sidewall of the polysilicon film pattern has a thickness substantially identical to that of a portion of the first oxide film formed on a sidewall of the metal silicide film pattern. A failure of a semiconductor device having the gate electrode can be minimized because the gate electrode has an improved sidewall profile.